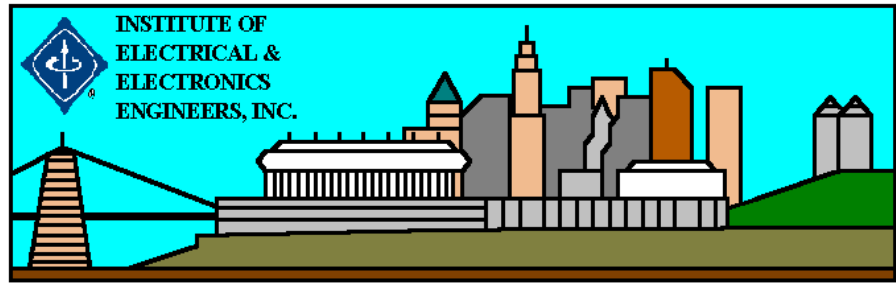


IEEE CINCINNATI SECTION NEWSLETTER NOVEMBER/ DECEMBER 2001



CHAIR'S MESSAGE

by Tom Grau, Section Chair

On October 25, 2001, our Program was "Laser Safety" which was superbly presented by Bill Ertle, of Rockwell Laser, Inc. Gregg Rockwell founded this company over 30 years ago to address safety in what was then a new, emerging industry – Laser Applications. Bill's presentation contained a wealth of information on laser applications from low-power positioning and pointing applications to high-power cutting and welding uses. The use of police speed measuring devices (like radar guns) was covered. All in all, this was a very interesting evening and on behalf of the Cincinnati Section, I thank all the members of Rockwell Lasers and especially Bill Ertle for participating in our meeting.

Members of IEEE Region 2 met in Cincinnati last month to discuss topics of interest to Region and Section officers. It was our pleasure to host this very successful meeting and we thank Mark Apter, Director, Region 2, for selecting the City of Cincinnati as the meeting site.

There are several openings on the Executive Committee and I urge you to volunteer to help conduct the business of our Section. Please contact me at (513) 899-3181 or E-Mail to T.GRAU@IEEE.ORG.

ATTENTION Retired Engineers and Scientists! ***Consider RESC Activities !***

The **Retired Engineers and Scientists of Cincinnati - RESC** for short - invite those with **technical backgrounds** who are **retired** and would like to **share good fellowship** while **pursuing interests** in technology, community, history and nostalgia, travel, and business or industry developments.

Activities include monthly **luncheon meetings**, periodic **plant tours**, and **golf** in season. Luncheon meetings are held on the third Tuesday of each month from October through May.

VIEW THE FULL SCHEDULE AT: **<http://RESC-Online.org>**

NOVEMBER LUNCHEON MEETING

Tuesday, November 20
11:30 AM

The Baltic States - Then and Now

Dr. Carl F. and Marjorie Evert, Past President of RESC and wife, both of whom have taught at many of the area's universities in fields of Electrical and Computer Engineering and Corporate Finance will summarize their Elderhostel Tour program, which explored the history and culture of each country in the 50 years of occupation and recovery, as well as modern day Finland and St. Petersburg, Russia.

DECEMBER LUNCHEON MEETING

Tuesday, December 18
11:30AM

"Mothers and Other Heroes" by Laura Pulfer

The popular columnist of the Cincinnati Enquirer, author, and commentator on NPR will be the featured speaker for the traditional RESC pre-holiday luncheon which is especially tailored for enjoyment of spouses & ladies. She will be introducing her new book as a sequel to "I Beg to Differ".

JANUARY LUNCHEON MEETING

Tuesday, January 15
11:30 AM

Canada - Our Northern Neighbor

Russell Knowling, Lecturer, UC Institute of Learning in Retirement, who has studied and taught in Australia, England, Canada, and the USA will lead us westward across Canada from Newfoundland to British Columbia with not just tourist features but the history, geography, and philosophy which distinguish the Provinces, and prepare you for personal exploration.

PLANT TOUR SCHEDULE - OCTOBER through JANUARY

NOTE: Attendance on tours may be limited

DECEMBER PLANT TOUR

Tuesday, December 4
10:00 AM

Motoman Inc. (robotics), West Carrollton, Ohio

As company headquarters, this plant includes their advanced systems development, testing, and training. Learn about robot evolution. See robots performing laser cutting and three dimensional welding. Also, see robots designed for clean rooms in semiconductor industry, for deflashing plastic parts, and for welding on Humvee vehicles.

Followed by lunch at **El Rancho Grande**

Event Attendance REQUIRES Advance Reservations: Contact Gene Anderson, phone (513) 353-2708

General information about RESC and supplemental information about events
is available on website: <http://RESC-online.org>

Scanning the Past: A History of Electrical Engineering from the Past

Submitted by Dick Reiman, Historian

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George A. Campbell and the Electric Wave Filter

It was 75 years ago this month that George A. Campbell was awarded two patents on the electric wave filter. One of the patents covered the principle of low-pass, high-pass, and band-pass filters consisting of inductors and capacitors, while the other concerned application of filters to telephone amplifiers. Wave filters had been used for several years before the basic patents were issued, and the importance of Campbell's discovery was already evident to engineers at the American Telephone and Telegraph Company (AT&T) in May 1917.

Campbell was born in 1870 in Hastings, Minnesota. He graduated in civil engineering from the Massachusetts Institute of Technology in 1891 and then went to Harvard University where he received a B.A. in 1892 and an M.A. in 1893. A fellowship enabled him to continue his education in mathematics and physics at several

universities in Europe until 1897, at which time he joined the mechanical department of the American Bell Telephone Company in Boston. Later, in 1901, he received a doctoral degree from Harvard.

Campbell's discovery of the electric wave filter grew out of his earlier work on loading coils for telephony. Drawing on his expert knowledge of Oliver Heaviside's transmission line theory, Campbell proposed adding coils at specified intervals along a telephone line as a way to reduce attenuation and distortion of signals. During 1899, he derived a formula for a loaded line which became known as "Campbell's equation." The equation enabled him to calculate the optimum size and spacing of loading coils. Laboratory tests confirmed his analysis by September 1899, and the first use of loading coils for commercial traffic occurred in May 1900. He wrote his doctoral thesis on loading and published a technical paper on loading in 1903. The innovation saved AT&T an estimated one hundred million dollars by 1925. Campbell's priority in the invention of the loading coil was challenged by Michael I. Pupin, a professor at Columbia University, who applied for a patent on the invention in 1900. An interference proceeding eventually awarded the priority to Pupin, who established that he had disclosed the invention two days earlier than Campbell.

Campbell's analysis of the loaded line had revealed that it behaved as a low-pass filter which would reject signals above a critical frequency. In an internal memorandum written in 1909, he discussed band-pass filters which would transmit a narrow band of frequencies and reject other frequencies. In another memorandum written in March 1910, he provided a comprehensive discussion of the electric wave filter along with circuit diagrams and attenuation versus frequency graphs. Campbell's memorandum provided the basis for a patent application, but it was abandoned in 1913 when the AT&T patent attorneys and the patent examiner failed to appreciate the novelty of the invention. However the increasing importance of the filter to the telephone company stimulated a renewed effort to obtain patent coverage. This time the application, filed in 1915, proved successful. Campbell published a paper on the theory of the wave filter in 1922 in *The Bell System Technical Journal*. The editor commented, in an introduction to the paper, that the wave filter already had become "indispensable in many branches of electrical communication." Vannevar Bush later wrote that Campbell's 1922 paper had "marked the advent of a new understanding of the subject."

Campbell received the Medal of Honor of the Institute of Radio Engineers in 1936 and the Edison Medal of the American Institute of Electrical Engineers in 1940. He retired from AT&T in 1935 and the company published a book of his collected technical papers and some of his previously unpublished technical memoranda in 1937. He died in November 1954. An obituary characterized him as "a gentle and retiring man" with a "spirit of inquiry that left its enduring impact on the character of the Bell Telephone System."

James E. Brittain
School of History, Technology, and Society

Georgia Institute of Technology

TO SUBSCRIBE TO THE ELECTRONIC NEWSLETTER

This newsletter is only available via e-mail or the Section's web page at <http://ieee.cincinnati.fuse.net/> with the exception of new Section members (one issue only) or members who have specifically requested a copy be delivered through the U. S. Mail.

If you are a new Section member and would like to get this newsletter electronically, please contact Bob Morrison (Editor) at **513-287-3697** or by e-mail at j.r.morrison@ieee.org. Provide your name and member number. In case there are questions, please include a daytime telephone number as well.

If you would like the "Snail Mail" version, you must contact Bob Morrison via the above means or call the Section's voice mail at **513-629-9380**.

NEW MEMBERS

The following individuals are IEEE members who are new to our Section:

Shishir Agrawal	Gabe T. Dagani	Brian Mize
Alan H. Antoine	Benjamin R. Daugherty	Leonard Eric Mwathi
Samuel Atkins	Aaron Eppert	G. Badri Narayanan
Terence M. Barron	Ian T. Hammons	Jayson A. Nowak
Prashant R. Bhadri	Nichloas Harth	Raymond J. O'Connell
Kevin M. Bowers	James W. Hauser	Paul J. Puglielli
Holly Burton	Charlie S. Howell	Richard Shottenfeld
Maren A. Butz	James A. Hunt	Jeff A. Siekman
Artuto Campos	Sumita Jagannathan	C. Sowa
John R. Carlson	Boris Kogan	Don Stoller
David A. Charley	Nitin P. Lele	Vaughn R. Svendsen
Hang Chen	Chuck Lima	Vikas Vijay
Robert K. Clary	Prosenjit Mal	William H. Wood
Bryan J. Clem	James F. Martin	Kuntao Ye
Carlos M. Cordeiro	T. Douglas Mast	
Steven M. Crowley	Steven A. Minor	

We wish to extend our welcome to all of our Section's new members!!!

ELECTRICAL WORLD MAGAZINE **125th ANNIVERSARY**

by Bob Morrison, Editor

In 1999, Electrical World Magazine celebrated their 125th anniversary as one of the premier publications for the Electric Power Industry. They presented a history of significant People, Companies, Industry Changes and Innovative Technologies which have served to define the current status of the Electric Power Industry. In the next few months, their article will be reprinted in this newsletter (*permission granted by McGraw-Hill Publishing Co.*)

PEOPLE

CHARLES BRUSH (1849-1929)

As night fell on a September day in 1879, an unusual sight appeared on the corner of Fourth and Market Streets in San Francisco. Two tiny Brush dynamos powered 21 arc lamps that lit up the entire street. At that instant, Charles Brush ushered in the electrical age by showcasing the world's first practical commercial lighting system.

Brush's arc lamp became a commercial mainstay in the outdoor lighting market in the US and Europe. Its dominance continued until the incandescent bulb overtook its high-voltage cousin.

Unlike many of his electric power contemporaries, Brush was a professionally trained mechanical engineer, who received his degree from the University of Michigan in 1869. He also managed to parlay his formal training into a personal fortune based on his arc lamp.

Brush's successes could be attributed to the confidence he discovered after a schoolyard skirmish. The target of neighborhood bullies, Brush one day challenged them and emerged victorious. Friends say that from then on he was unstoppable.

ELIHU THOMSON (1858-1937)

The epitome of a teacher, Elihu Thomson -- who invented the three-coil dynamo and circuit breaker system -- did more to disseminate industry information than any other electric power pioneer did. Originally trained as a science teacher, Thomson was passionate about education. Edwin Rice, a one-time student and former president of General Electric Co., believed that Thomson had an "intuitive insight into nature and her ways," and claimed that the Professor was more noted for his good nature and innate ability to learn than his scientific aptitude or his successes with experiments.

If Thomson's teaching abilities did surpass his technical skill, it is not apparent in the history books. Thomson cofounded the Thomson-Houston Co. -- the company that merged with Edison Electric Light Co. to form General Electric. He also received 696 US patents for instruments as diverse as arc lights, generators, and X-ray tubes. He played a pivotal role in establishing General Electric's famed research facilities. Thomson also developed the wattmeter, which made electricity measurable and turned electric power into a commercial industry.

MICHAEL FARADAY (1791-1867)

In an archetypal rags-to-riches story, Michael Faraday rose from an impoverished, uneducated beginning to become a driving force in the industrial revolution. Faraday, who began experimenting in his family's home, is best known for his discovery of induction and his corresponding invention of the transformer.

Also, Faraday's principles of electromagnetism -- which provided an explanation and a means for generating electricity -- gave rise to the electric power industry. An accomplished physicist and chemist -- he discovered benzene and also developed a process to liquefy chlorine -- Faraday was dubbed the Father of Electrical Engineering and the greatest lecturer of his time by his contemporaries.



Regardless of the accolades, Faraday remained humble throughout his life. In fact, reportedly he was offered, but refused, knighthood, noting that he wished to simply remain Michael Faraday.

IEEE NEWS

IEEE-USA LAUNCHES NEW MEMBER PUBLICATIONS ONLINE

Two new installments of IEEE-USA's Professional Guideline series, "TEN TAX-FAVORED WAYS TO SAVE FOR RETIREMENT*" and "*INTELLECTUAL PROPERTY AND THE EMPLOYEE ENGINEER", are now available online (PDF) FREE to IEEE members. To view the publications, complete the password request form and access information will be e-mailed to you as soon as member status is confirmed.

<http://www.ieeeusa.org/releases/092801.html>

(Continued on Page 9)

IEEE 2002 CINCINNATI SECTION BALLOT

**Election of Officers for Term
Beginning 1/1/02 and Ending 12/31/03**

MEMBER - AT - LARGE

☐

Mark Strong

☐

Write - In _____

A résumé of the candidate is below. Please return the ballot by:

DECEMBER 15, 2001

Return the complete ballot to Bob Morrison (Newsletter Editor) at j.r.morrison@ieee.org or via regular mail to:

J. R. Morrison
4472 Oakville Dr.
Cincinnati, Ohio 45211

Member Name: _____

Signature: _____

Member Number: _____

Résumé of Candidate

MARK STRONG

BSEE Purdue University 1990, Co-op Program, Cincinnati Bell ComQuest Co., Telecom Test Engineer 1986-90. Cincinnati Bell Telephone's Service Cost department, 1990-1995. Advanced Intelligent Network Service Developer for CBT's Network Architecture Planning Group responsible for design, development, and deployment of AIN services on the Lucent AINet platform from 1995 – 1999. Network Planner for Zoomtown ADSL core data architecture 1999 – 2001. In April 2001, joined Taqua Systems, Inc. headquartered in Hyannis, MA as their Regional Sales Engineer for the midwest in their Cincinnati office. Taqua offers a single shelf, next-generation Class 5 central office telephone switch as an alternative to traditional legacy vendors.



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POSITION OPENING

Title	RF Engineer (microwave design and development)		
Location	Confidential	Company	Semper Primus/Confidential
<u>Requirements:</u> BS EE, MS preferred. RF engineering design experience in 5-20 GHz range. Experience in concept development, system integration, proposal development, circuit design, ASIC design and microwave component design and development. Active secret clearance preferred.			
<u>Responsibilities:</u> Develop new system related to microwave antennas. Play a key role in electronic design from concept to implementation. Find cost-effective solutions for requirements. Attend occasional domestic and international conferences and site visits.			
<u>Company Information:</u> A leader in the defense industry, known for top-quality products and a friendly, stimulating work environment. Performance is rewarded with increased responsibility, as well as very competitive salary and benefits.			
Salary	Whatever it takes		
401K	Yes		
Position Reports To	Director of Research and Development		
Direct Reports	Work with engineers, designers, and technicians based on project.		
Growth Opportunity	Yes!		
Position Status	Open due to growth		
Relocation	Depends on experience		
Travel	A few national and international conferences per year.		

If you are interested in the above position, or want to explore opportunities with industry leaders that will help you meet your career goals, contact Gibson Armstrong at (717) 786-0506 or gib@semperprimus.com. We look forward to being part of your success!

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That's a Lot of Prime-Target Exposure !!!

The Newsletter is also available on our Web Page at:

<http://ieee.cincinnati.fuse.net/>

Advertising Rates:

Ad Sizes	1 Time	3 Times	5 Times	8 Times
Business Card (3-1/2" x 2" Horiz.)	\$ 15	\$ 35	\$ 50	\$ 60
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2/3 Pg. (6-3/4" x 6-1/2" Horiz.)	35	90	120	145
Full Pg. (6-3/4" x 9-1/2")	45	110	145	165

If you are interested in placing an ad, or if you have questions, please contact:

Bob Morrison, Newsletter Editor

IEEE, c/o Cinergy Corp.

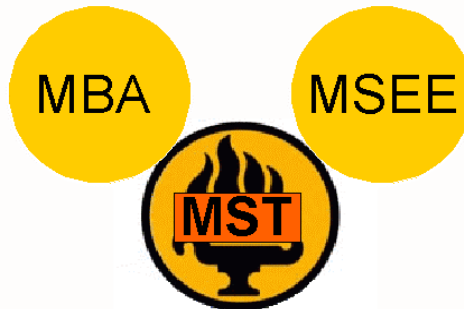
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Professional Development Another Alternative



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Northern Kentucky University

(<http://www.nku.edu/~mst>)

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(859) 572-6352
jgray@nku.edu

IEEE NEWS

(Continued from Page 5)

IEEE-USA ONLINE SALARY CALCULATOR COMING SOON

How does your compensation stack up against that of other U.S. IEEE members? To be launched online for the first time, IEEE-USA's Salary Calculator plugs in data from the IEEE-USA SALARY AND FRINGE BENEFITS SURVEY, 2001 EDITION to compute comparative pay estimates for thousands of different employment situations. Sign up now to be notified when IEEE-USA's online salary calculator is live on the Web. <http://www.ieeeusa.org/careers/salarycalculator/index.html>

"IEEE-USA NEWS & VIEWS" TO PUBLISH FIVE ISSUES IN 2002

At its October meetings in Lafayette, La., the IEEE-USA Operations Committee voted to fund an additional issue of "IEEE-USA NEWS & VIEWS" in 2002. Published four times in its inaugural year, the four-page "magapaper" is a digest of articles and columns from IEEE-USA's monthly webzines and other member communications. Look for IEEE-USA NEWS & VIEWS in the IEEE polybag with SPECTRUM and THE INSTITUTE.

WEB RESOURCE: ENGINEERING A RESPONSE TO TERRORISM

The IEEE-USA website provides background on the problem of terrorism and some proposed responses, and is intended to promote a discussion of what the IEEE and its members can do to help stop terrorism. <http://www.ieeeusa.org/forum/terrorism.html>

ENERGY POLICIES: THE EVOLVING ROLE OF ENGINEERS

IEEE-USA President Ned R. Southoff introduces this latest President's Column, written by Thomas Schneider and Fernando Alvarado, Chair and Vice Chair of the IEEE-USA Energy Policy Committee. <http://www.ieeeusa.org/newspubs/presidentscolumn/southoffseptoct01.html>

IEEE-USA FILES AMICUS BRIEF IN LANDMARK PATENT CASE

On 31 August, IEEE-USA filed an amicus curiae ("friend of the court") brief before the U.S. Supreme Court in the Festo Corporation v. Skoketsu Kinzoku Kogyo Kabushiki Co., Ltd. patent case. In Festo, the Supreme Court will be considering to what extent the holder of an amended patent is barred from asserting patent rights against another inventor whose design is substantially the same as the patented invention. As an alternative to the "flexible bar" and "absolute bar" standards advocated by the opposing sides in Festo, IEEE-USA is asking the Court to consider a "foreseeability bar," where holders of an amended patent give up protection for only those things that were foreseeable by persons familiar with the associated technology. <http://www.ieeeusa.org/forum/policy/01aug31festo.html>

IEEE-USA ONLINE CONSULTANTS DATABASE

The IEEE-USA Consultants Database has been completely overhauled to make it easier than ever for prospective clients and electrotechnology consultants to find each other. Registered consultants can list their credentials and contact information, link to their Web sites, place banner ads and update their profiles instantly. The new database's upgraded search function allows clients to search for consultants by location, technical specialty and full-text keyword search. Clients can also post assignments, and field inquiries from interested consultants.

Last year, the site logged more than 30,000 visits, making it the ideal online meeting place for consultants and prospective clients. Sign up today at: <http://www.ieeeusa.org/consultants>

2001 WISE JOURNAL OF ENGINEERING AND PUBLIC POLICY

The annual compilation of research by participants in the Washington Internships for Students of Engineering (WISE) program includes three papers by IEEE student members Matthew Bright ("Federal Strategies Encouraging Rural Broadband Access"); Rick Cordaro ("Electric Reliability in Deregulated Markets"); and Brent Rowe ("Opening the Airwaves: Accommodating Third Generation Wireless Technologies").
<http://www.wise-intern.org/journal01/index.html>

The IEEE is recruiting U.S. student members to apply for the Summer 2002 WISE program. The application deadline is December 3, 2001. For details, go to: <http://www.wise-intern.org/apply.html>

IEEE-USA SEEKING APPLICANTS FOR 2003 CONGRESSIONAL FELLOWSHIPS

IEEE-USA works to strengthen the ties between the engineering community and the legislative branch of the federal government by sponsoring fellows for one-year assignments to the staff of a Member of Congress or Congressional Committee. IEEE-USA is currently accepting applications for 2003 Congressional Fellowships. The deadline for applications is February 22, 2002. For details, go to:
<http://www.ieeeusa.org/forum/GOVFEL/congfel.html>

NATIONAL ENGINEERS WEEK IS FEBRUARY 17-23, 2002

Mark your calendars and start your planning for E-Week 2002. Visit the official E-Week website for ideas on how to participate in this annual celebration of the profession. <http://www.eweek.org>

NEW IEEE VOLUNTEER RESOURCES PAGE

A revised Volunteer Resources web site has been posted at <http://www.ieee.org/organizations/vols/>. New features of the site are direct links to various organizational unit home pages, quick links to sites used by many volunteers, and the capability to suggest pages that should be linked from the Volunteer Resources Home Page. The site continues to include links for key sites in the following areas: All Volunteers; People Writing/Creating Content; People Involved in Publishing; People Involved in Technical Societies; People Involved in Sections; People Involved in Chapters; People Involved in Student Branches; People Involved in Conferences; People Involved in Standards Development; People Involved in Professional Development; and People Involved in Organizational Unit Board Activities.

REGION 8 WORKSHOP ON GLOBAL EQUIVALENCY ACCREDITATION FOR UNIVERSITY ENGINEERING PROGRAMS

Invited leaders of industry, government, universities, and IEEE Region 8 representatives met to consider the problems and promises of global equivalency of academic accreditation for university engineering programs at the 8-9 July 2001 IEEE Engineering and Computer Science Educational Program Accreditation Workshop in Bratislava, Slovakia. Held in conjunction with EuroCon 2001, financial support came from IEEE Educational Activities (EAB), IEEE Foundation, IEEE Region 8, the IEEE Computer Society, and IEEE Regional Activities Board.

Representatives from Germany, Greece, Mexico, Slovakia, the UK, and the US addressed the intellectual and the practical considerations in the quest for global equivalency in accreditation. Accreditation identifies those engineering and computing programs that meet established quality criteria to the public, to employers, and to students and their parents. Being accredited is a mark of achievement for a university, attracting the best and brightest students.

"The exchange of experience among the representatives from the US, unifying Europe and others," said Daniel Donoval, Slovak University of Technology, and one of the organizers of the Workshop, "could contribute to the international acceptance of accredited study programs."

For the last seven years, IEEE EAB representatives have assisted in the development of, or in some cases, the expansion of programs in El Salvador, India, Mexico, Panama, Peru, and Turkey. Though based on the Accreditation Board for Engineering and Technology model, new customized programs are being developed taking into account a country's culture and traditions. Any one interested in arranging for a presentation about establishing university accreditation should contact James T. Cain, Chair, IEEE EAB Committee on Global Accreditation Activities at t.cain@ieee.org.

"The most valuable things that I have learned [at this workshop] are the real steps that any university can do towards IEEE and IEE (Institution of Electrical Engineers, UK) type accreditation," said Rossitza Goleva, Technical University of Sofia, Bulgaria, and the representative from the IEEE Bulgarian Section, "and how such accreditation can help students in their professional life."

"Many of the participants, particularly from countries where there was no tradition in accreditation, appreciated the presentations and are looking forward to receiving the proceedings from the workshop on CD-ROM," said Donoval.

A summary of the workshop is posted at <http://www.ieee.org/eab/apc/wkshp/index.htm>. The Workshop Proceedings are available on CD-ROM from EAB. For further information, contact Sharon Strock, s.strock@ieee.org or Daniel Donoval, donoval@elf.stuba.sk.

The IEEE Cincinnati Section Executive Committee **Member Names and Phone Numbers**

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